9-15-2017

Educational Policies Committee Program Proposal, College of Engineering, September 15, 2017 - Computer Science Teaching Minor

Utah State University

Utah System of Higher Education
New Academic Program Proposal
Cover/Signature Page - Abbreviated Template

Institution Submitting Request:	Utah State University
Proposed or Current Program Title:	Computer Science Teaching Minor
Sponsoring School, College, or Division:	College of Engineering
Sponsoring Academic Department(s) or Unit(s):	Computer Science
Classification of Instructional Program Code[1] :	11.07
Min/Max Credit Hours Required of Full Program:	20 / 20
Proposed Beginning Term[2]:	Spring 2018
Institutional Board of Trustees' Approval Date:	05/05/2017

☐	Certificate of Proficiency	☐ Entry-level CTE CP	☐ Mid-level CP
☐	Certificate of Completion		
☒	Minor		
☐	Graduate Certificate		
☐	K-12 Endorsement Program		
☐	NEW Emphasis for Regent-Approved Program		
☐	Out of Service Area Delivery Program		

Chief Academic Officer (or Designee) Signature:
I, the Chief Academic Officer or Designee, certify that all required institutional approvals have been obtained prior to submitting this request to the Office of the Commissioner.

Edward M. Reeve Date: June 21, 2017

☒ I understand that checking this box constitutes my legal signature.

[1] For CIP code classifications, please see http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55.
[2] "Proposed Beginning Term" refers to first term after Regent approval that students may declare this program.

Utah System of Higher Education
Program Description - Abbreviated Template

Section I: The Request

Utah State University requests approval to offer the following Minor: Computer Science Teaching Minor effective Spring 2018. This program was approved by the institutional Board of Trustees on .

Section II: Program Proposal/Needs Assessment

Program Description/Rationale

Present a brief program description. Describe the institutional procedures used to arrive at a decision to offer the program. Briefly indicate why such a program should be initiated. State how the institution and the USHE benefit by offering the proposed program. Provide evidence of student interest and demand that supports potential program enrollment.

This minor (20 credits) was approved at the department and college level.

Many math teaching majors (and to some extent science teaching majors) have asked about a CS teaching credential. This interest has been ongoing for the last ten years. At the most recent majors meeting, this topic received a lot of discussion.

USU has one of the top education programs in the nation. It makes sense to attach a CS teaching credential to the education program. Additionally, there is an increasing need for CS teachers in our state.

Computer Science for All is the President's new initiative to empower all American students from kindergarten through high school to learn computer science and be equipped with the computational thinking skills they need to be creators in the digital economy. Both educators and business leaders are increasingly recognizing that computer science is a “new basic” skill necessary for economic opportunity and social mobility.

Labor Market Demand

Provide local, state, and/or national labor market data that speak to the need for this program. Occupational demand, wage, and number of annual openings information may be found at sources such as Utah DWS Occupation Information Data Viewer (jobs.utah.gov/jsp/wi/utalmis/gotoOccinfo.do) and the Occupation Outlook Handbook (www.bls.gov/oco).

According to the occupation Outlook Handbook, median pay for Career and Technical Education Techers was $53,800 per year in 2015. There were 231,800 jobs in 2014 with a expected 4% growth grade (2014-2024).

According to NCWIT (The National Center for Women and Information Technology), by 2024, 1.1 million computing-related job openings are expected. At the current rate, only 41% of these jobs could be filled by U.S. computing bachelor’s degree recipients. Students need the opportunity to receive this vital training.

In order to produce the needed supply of Computer Science graduates, students need Computer Science instruction in the high schools. Creation of this teaching minor will help to provide Computer Science instruction.

Consistency with Institutional Mission/Impact on Other USHE Institutions

Explain how the program is consistent with the institution's Regents-approved mission, roles, and goals. Institutional mission and roles may be found at higheredutah.org/policies/policyr312/ . Indicate if the program will be delivered outside of designated service area; provide justification. Service areas are defined in higheredutah.org/policies/policyr315/ .

This program is consistent with the mission of Utah State University as it aids teacher preparation.

Last year, there were more than 600,000 high-paying tech jobs across the United States that were unfilled, and by 2018, 51 percent of all STEM jobs are projected to be in computer science-related fields. Computer science and data science are not only important for the tech sector, but for so many industries, including transportation, healthcare, education, and financial services.

The citizens of Utah need access to this important training.

Other USHE institutions have expressed interest in the program. Currently, there is a Teaching Minor offered at the University of Utah and Weber State. Since the teaching minor is associated with a traditional education degree, it is important for the teaching minor to be available locally.

Finances

What costs or savings are anticipated in implementing the proposed program? If new funds are required, indicate expected sources of funds. Describe any budgetary impact on other programs or units within the institution.

$6K per year will be required to teach CS4350, the new methods course. Other required classes are currently being taught and require no new funding. Funds will be paid for out of normal departmental budgets.

Section III: Curriculum

Program Curriculum

List all courses, including new courses, to be offered in the proposed program by prefix, number, title, and credit hours (or credit equivalences). Indicate new courses with an X in the appropriate columns. The total number of credit hours should reflect the number of credits required to receive the award. For NEW Emphases, skip to emphases tables below.
For variable credits, please enter the minimum value in the table below for credit hours. To explain variable credit in detail as well as any additional information, use the narrative box below.

		Course Number	NEW Course	Course Title	Credit Hours
		General Education Courses (list specific courses if recommended for this program on Degree Map)			
				General Education Credit Hour Sub-Total	
		Required Courses			
+	-	CS 1400		Introduction to Computer Science CS1	4
+	-	CS1410		Introduction to Computer Science CS2	3
+	-	CS2420		Algorithms and Data Structures CS3	3
+	-	CS4350	X	Teaching Methods	3
+	-	SCED3300		Clinical Experience 1	1
+	-				
+	-				
+	-				
+	-				
				Required Course Credit Hour Sub-Total	14
		Elective Courses			
+	-	CS2410		Introduction to Event Driven Programming and GUI's	3
+	-	CS2610		Developing Dynamic, Database-Driven, Web Applications	3
+	-	CS3100		Operating Systems and Concurrency	3
+	-	CS3200		Mobile Application Development	3
+	-	CS3430		Scientific Computing with Python	3
+	-	CS3450		Introduction to Software Engineering (CI)	3
+	-	CS4700		Programming Languages	3
+	-			Any advisor approved class numbered 5000 or above (3-4 credits)	3
+	-				
+	-			(Select two electives)	
				Elective Credit Hour Sub-Total	6
				Core Curriculum Credit Hour Sub-Total	20

Program Curriculum Narrative

Describe any variable credits. You may also include additional curriculum information, as needed.

The 5000 level courses may be 4 credits.

Degree Map

Degree maps pertain to undergraduate programs ONLY. Provide a degree map for proposed program. Degree Maps were approved by the State Board of Regents on July 17, 2014 as a degree completion measure. Degree maps or graduation plans are a suggested semester-by-semester class schedule that includes prefix, number, title, and semester hours. For more details see http://higheredutah.org/pdf/agendas/201407/TAB%20A%202014-7-18.pdf (Item #3).

Please cut-and-paste the degree map or manually enter the degree map in the table below

First Year Fall	Cr. Hr.	First Year Spring	Cr. Hr.
CS 1400: Introduction to Computer Science--CS	4	CS 1410: Introduction to Computer Science--CS	3
Total	4	Total	3
Second Year Fall	**Cr. Hr.**	**Second Year Spring**	**Cr. Hr.**
CS 2420: Algorithms and Data Structures--CS 2	3	CS Elective	3
Total	3	Total	3
Third Year Fall	**Cr. Hr.**	**Third Year Spring**	**Cr. Hr.**
CS Elective	3	CS4350 Computer ScienceTeaching Methods	3
Total	3	Total	3
Fourth Year Fall	**Cr. Hr.**	**Fourth Year Spring**	**Cr. Hr.**
SCED3300	1		
Total	1	Total	